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STATE OF IOWA
DEPARTMENT OF COMMERCE
BEFORE THE IOWA UTILITIES BOARD

IN RE: COMPLAINT OF DOUGLAS PALS	DOCKET NO. FCU-2013-0009
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REPORT ON INVESTIGATION

Pursuant to the orders dated October 14 and December 16, 2014, the Office of Consumer Advocate (OCA), Iowa Department of Justice, submits the following report:

1. This formal complaint docket is one of six such dockets commenced at about the same time addressing intrastate rural call completion failures in Iowa. OCA has previously filed extensive reports in two of the other dockets. See *In re Complaint of Frahm*, No. FCU-2013-0007, report filed November 13, 2014; *In re Complaint of Rehabilitation Center of Allison*, No. FCU-2012-0019, report filed December 19, 2014.¹

2. This report concentrates on the information specific to this docket. It should be read in conjunction with the earlier reports referenced above. It does not repeat the general information provided in the earlier reports. It does repeat, largely without change, the steps that OCA has suggested originating and intermediate long distance carriers should take as a means of restoring the reliability of the network and hence of achieving a long-term solution to the problem.

¹See also *In re Complaint of UnityPoint Clinic Family Medicine at Huxley*, No. FCU-2013-0004, report filed Jan. 9, 2015; *In re Complaint of Hancock County Health Systems*, No. FCU-2013-0005, report filed Jan. 16, 2015; *In re Complaint of Adolphson*, No. FCU-2013-0006, report filed Jan. 20, 2015.

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3. The complaint in this docket focuses on an apparent incidence of unlawful “caller ID spoofing,” which involves the alteration or manipulation of caller identification information. See “Consumers Gain New Protections against Fraudulent Caller ID ‘Spoofing,’” Docket No. 11-39, 2011 WL 2491539 (FCC 2011) (“Using spoofing services accessible through the web or prepaid calls, anyone can inexpensively mask the origin of a call with fake caller identification information”).

4. The magnitude of the caller ID spoofing problem, and of the need for a solution, was underscored yesterday, when OCA received a communication from Hancock County Health Systems, the complainant in one of the other rural call completion dockets, advising that an apparent scammer had broadcast one of the hospital’s phone numbers as the scammer’s caller ID number, while robocalling thousands of people. Hundreds or thousands of those who missed the robocall placed a return call to the hospital. The flood of return calls locked the hospital’s phone system. Both incoming and outgoing calls were disabled.

5. As detailed below, investigation in this docket did not reveal the identity of the perpetrator.

6. This report also addresses a further call completion difficulty reported by the complainant in November 2013. Aside from that difficulty, the complainant has consistently reported no further call completion difficulties throughout the pendency of these proceedings.

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Pals Complaint

7. In his complaint filed March 13, 2013, Douglas Pals alleged that on February 12, 2013, at 2:00 p.m., he placed a call from his home in Clive, Iowa (area code 515) to a number in West Liberty, Iowa (area code 319).² The called party did not answer because her caller ID displayed an incorrect calling party name (BIDAXIS) and incorrect calling party number in New York City (area code 347). After listening to his voice message, she called him back. They did a few test calls. One worked fine. Another had a problem connecting but did not have the same incorrect caller ID information.

CenturyLink Responses

8. In a letter dated April 3, 2013, Qwest Corporation d/b/a CenturyLink QC (CenturyLink), the long distance carrier for Pals, advised that it had opened a trouble ticket and determined the routing of the calls was the issue. The technician removed intermediate carrier Bluetone Communications, LLC, formerly Blue Mile, from the routing to the 319-627 NPA-NXX of the West Liberty destination. The technician opened a trouble ticket with Bluetone and tested the fix.

9. In discovery, CenturyLink confirmed the information provided in its April 2013 letter. Its records show that it gave the correct caller ID information to Bluetone. OCA Exhibit CL-2.

²The population of West Liberty is 3,736 (2010 census).

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10. On March 26, 2013, CenturyLink wrote Bluetone regarding the apparent spoofing in this and two other instances (neither originating or terminating in Iowa) and requesting a root cause analysis within five business days. OCA Exhibit CL-4, Attachment A.³

11. On April 4, 2013, Bluetone responded to CenturyLink that both it and its supplier had confirmed receipt of the correct calling party number from CenturyLink and presented the correct calling party number to its downstream provider. Neither the supplier nor the downstream provider was identified. According to the response, test calls did not duplicate “BIDAXIS” and the area code 347 number. One test call “received no name or number as confirmed by the term party.” Subsequent test calls completed correctly. Bluetone removed its downstream carrier from the routing. OCA Exhibit CL-4, Attachment B.

12. CenturyLink permanently removed Bluetone from the routing to the 319-627 NPA-NXX, intrastate and interstate, on March 21, 2013. OCA Exhibits CL-3, CL-5, CL-7. Prior to the change, the first five carriers in CenturyLink’s routing sequence were:

{ [REDACTED] }. OCA Exhibit CL-8.

{ [REDACTED]

[REDACTED] }. After the

change, the first five carriers in CenturyLink’s sequence were: { [REDACTED]

[REDACTED] }. OCA Exhibit CL-9. When asked about

subsequent changes to the routing, CenturyLink responded that changes can occur on an

³CenturyLink had probably notified Bluetone of the complaint at an earlier time, as Bluetone had begun investigating the matter at least as early as March 21, 2013. OCA Exhibit BT-7.

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ongoing basis but that no other carriers have been removed from the routing on calls to the 319-627 destination. OCA Exhibit CL-10.⁴

13. When asked to explain any financial consequences to CenturyLink of removing Bluetone from the routing on calls to the 319-627 NPA-NXX, CenturyLink responded that the estimated cost impact was { [REDACTED] } monthly for interstate traffic and { [REDACTED] } monthly for intrastate traffic. OCA Exhibit CL-11.

14. Information regarding the CenturyLink testing results for Bluetone was provided in No. FCU-2013-0004, *In re Complaint of UnityPoint Clinic Family Medicine at Huxley*, OCA report filed Jan. 9, 2015, ¶ 16. A retest on September 10, 2013, produced in this docket, resulted in { [REDACTED] }
{ [REDACTED] }. OCA Exhibit CL-14, Attachments A and B, pp. 8 and 10.

15. Information regarding the number of occasions { [REDACTED] }
{ [REDACTED] } Bluetone { [REDACTED] }
{ [REDACTED] } was provided in No. FCU-2013-0004, *In re Complaint of UnityPoint Clinic Family Medicine at Huxley*, see OCA report filed Jan. 9, 2015, ¶ 38. Information provided in this docket shows { [REDACTED] }

⁴When asked whether CenturyLink had received other complaints regarding call completion related difficulties on calls to 319-627 NPA-NXX, CenturyLink referenced the spreadsheets provided by CenturyLink in No. FCU-2012-0019, *In re Rehabilitation Center or Allison*. OCA Exhibit CL-12. The spreadsheets show only one other complaint of that type on calls to the 319-627 NPA-NXX during 2011, 2012 or 2013. The number of complaints, however, does not necessarily reflect the extent of the difficulties. As observed elsewhere, many people use their cell phones when an attempted call fails. When they do, the difficulties are commonly not recorded. See *In re Complaint of Hancock County Health Systems*, No. FCU-2013-0005, OCA report filed Jan. 16, 2015, ¶¶ 4, 12.

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[REDACTED]

[REDACTED]}. OCA Exhibit CL-15.

16. When asked whether it has an understanding of what could have caused a caller identification display of “BIDAXIS” and the area code 347 number, CenturyLink responded: “CenturyLink has no view into any underlying carriers’ systems.

CenturyLink works our complaints based on the input we have from our customers and our underlying carriers. CenturyLink handed off correct caller ID information to our underlying carrier.” OCA Exhibit CL-20.

Bluetone Responses

17. In a letter to Board staff dated April 24, 2013, Bluetone advised that it had received the correct caller information from CenturyLink and had passed the correct caller information to its downstream carrier. Test calls did not duplicate the “BIDAXIS” and area code 347 result, but there was no name and no number on one test call, as confirmed by the end user. Subsequent test calls completed correctly. Bluetone removed its downstream carrier from the routing.

18. In discovery, Bluetone identified its downstream provider as JTRK Enterprises. Bluetone removed JTRK from the routing to the 319-627 destination number on March 21, 2013. OCA Exhibit BT-4. This action had no actual impact on calls routed by CenturyLink, because CenturyLink had removed Bluetone from the routing. OCA Exhibit BT-6. For the same reason, this action had no financial impact to Bluetone. OCA Exhibit BT-9. Bluetone had no written contract with JTRK Enterprises. OCA Exhibit BT-13.

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19. The correspondence between Bluetone and JTRK includes an observation that the 319-627 NPA-NXX is “part of the High Cost code.” OCA Exhibit BT-7, p. 16. The correspondence also includes the following communication from Bluetone to JTRK on March 21, 2013:

These Caller ID issues are occurring too frequently over this route. Somewhere along the route to the end user, someone is changing the caller ID. I hate to make assumptions, but it looks like some carrier along the way is changing the calling party’s caller ID # to an out of state number, most likely in an effort to avoid intrastate CABS [Carrier Access Billing System] billing.

OCA Exhibit BT-7, p. 22. It appears {

[REDACTED]

}. OCA Exhibits BT-7, p. 8.

20. Bluetone provided information, not specific to this docket, regarding its inability to see the operations of a downstream carrier, its approach to testing the ability of a downstream carrier to complete calls properly, the metrics and standards it uses to evaluate the performance of downstream carriers, and the sanctions available to it when standards are not met. That information was presented and discussed in OCA’s report filed January 9, 2015, in No. FCU-2013-0004, *In re Complaint of UnityPoint Clinic Family Medicine*, ¶¶ 29-36.

21. When asked whether it has an understanding of what could have caused a caller identification display of “BIDAXIS” and the 347 area code number, Bluetone responded “No.” OCA Exhibit BT-1.

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Liberty Responses

22. West Liberty Telephone Company d/b/a Liberty Communications (Liberty), the terminating local exchange carrier in West Liberty, provided responses to three data requests. The responses indicated that in Liberty's experience voice over Internet protocol (VoIP) switches are flexible and susceptible to caller ID manipulation. The responses further indicated that customers very often report call quality problems at the same time they report caller ID "mismatches," that such "mismatches" are an important indicator of what kind of voice switch is carrying a call, and that end-to-end quality of service mechanisms for VoIP calls are lacking. OCA Exhibits WL-1, WL-2, WL-3.

23. In its affidavit dated October 24, 2014, Liberty advised that the employee who prepared the discovery responses has since left the company and that Liberty is unable to locate records that would enable it to authenticate all portions of the data request responses. The affidavit confirmed Liberty's general understanding regarding the susceptibility of VoIP switches to caller ID manipulation and the dearth of end-to-end quality standards for VoIP calls, as referenced in the preceding paragraph. OCA Exhibit WL-Aff.

24. Liberty provided OCA with the name { [REDACTED] } and contact information { [REDACTED] } for the individual who had prepared the data request responses before leaving Liberty's employ. On October 29, 2014, OCA contacted that individual. He reported no recollection of the matter and stated he has no records that would refresh his recollection or otherwise assist in the investigation.

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November 2013

25. On November 22, 2013, Mr. Pals advised that on November 19, 2013, at 10:11 a.m., he placed a call from his home in Clive, Iowa, to USA Communications, in Shellsburg, Iowa, NPA-NXX 319-436. According to his notes, “it rang 3 times and then went to dead air and, after waiting about 30-45 seconds to see if anything else would happen, the call disconnected.” He advised he hit the redial button on his phone right away and the call connected without any issues. See OCA report, filed Nov. 26, 2013.

26. CenturyLink opened a trouble ticket. The technician determined the routing was the issue, removed intermediate carrier TouchTone Communications, Inc., from the routing on calls to NPA-NXX 319-436, and opened a trouble ticket with TouchTone. Test calls subsequently completed correctly. The removal was { [REDACTED] }. OCA Exhibits CL-1, CL-16; see CenturyLink status reports filed Jan. 16 and Apr. 16, 2014.⁵

27. Prior to the change, the first five positions in CenturyLink’s intrastate routing sequence were { [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] }. OCA Exhibit CL-17.

28. After the change, the first five positions in CenturyLink’s intrastate routing sequence were: { [REDACTED] [REDACTED] [REDACTED] [REDACTED] [REDACTED] }. OCA Exhibit CL-17.

⁵The spreadsheets provided by CenturyLink in No. FCU-2012-0019, *In re Rehabilitation Center or Allison*, show no call completion related complaints to CenturyLink during 2011, 2012 or 2013 on calls to NPA-NXX 319-436. The number of complaints, however, does not necessarily reflect the extent of the difficulties. See note 4 above.

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29. CenturyLink records showed a duration on the November 19 failed call of 10 seconds. OCA Exhibit CL-1, p. 7.

30. When asked whether it has an understanding of why the November 19 call failed, CenturyLink responded { [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] }. OCA Exhibit CL-16.⁶

31. By correspondence to OCA dated July 22, 2014, TouchTone advised:

[T]he call came in from CenturyLink and was limited within our network due to capacity constraints. Overloads to our switch (used to handle the calls within our network from origination to destination) can cause a slowdown in processes. This includes call setup features resulting in delays if attempted during this period over a path that might be overburdened.

OCA Exhibit TT-Aff. OCA appreciates the candor of this response.

32. The correspondence from TouchTone went on to say that TouchTone was undergoing both software and hardware updates to prevent such instances, had expanded its services to allow for greater traffic flow, and was in the process of implementing further augments. OCA Exhibit TT-Aff.⁷

⁶Because CenturyLink had removed TouchTone from the routing to the 319-436 NPA-NXX, TouchTone would have had no calls destined for that NPA-NXX to release back to CenturyLink.

⁷OCA has not sought to add TouchTone as a party to these proceedings.

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Concrete Steps toward a Long-Term Solution

33. The following are concrete steps that CenturyLink and Bluetone should take as elements of a long-term solution to the problem. These suggested actions are intended to complement the work of the FCC, including the data collection and reporting to be implemented pursuant to the FCC rules. These suggested actions are also appropriate for consideration in a rule-making proceeding, which could afford long-term solutions industry-wide.

Step 1

Acknowledge responsibility for the performance of downstream carriers.

34. The FCC has recently emphasized in a related context the need for “end-to-end” carrier responsibility and accountability from the time a call is placed to the time it is completed.⁸ Such end-to-end responsibility is a prerequisite to solving the rural call completion problem. The first step in a long-term solution to the problem is for originating and upstream intermediate carriers to acknowledge responsibility for the performance of the downstream intermediate carriers they engage to complete the calls.

⁸“April 2014 Multistate 911 Outage: Cause and Impact, Report and Recommendations,” Public Safety Docket No. 14-72 (FCC Oct. 2014). Although the focus of the report was the vulnerability of the 911 system, the factors that account for this vulnerability, including the increasing reliance of IP-supported networks on geographically remote servers and on software-based components to support key functions, are equally applicable to the public telephone network as a whole.

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Step 2

Maintain on file with the Board a list of downstream carriers currently being used to carry Iowa traffic.

35. A simple filing of this character, with contact information for the downstream carriers, updated as changes occur, will keep the Board apprised of the identity of the companies that are carrying the Iowa traffic.

Step 3

Reduce the number of intermediate providers in the call paths.

36. A key reason for the increased problems in rural areas is that a call is often handled by numerous different providers, the identities of which may not even be known to the originating provider, resulting in nearly untraceable call routes. *In the Matter of Rural Call Completion*, 28 F.C.C.R. 16154(Nov. 8, 2013) ¶¶ 17, 87, 88. A provider that limits the number of intermediate providers in the call path is better able to manage performance to rural destinations than a provider that sends calls through numerous intermediate providers. Limiting the number of intermediate providers also limits the potential for lengthy setup delay and looping. *Id.* If a carrier can implement the “safe harbor” in the federal rules by limiting the number of intermediate providers on a call path to two or fewer, see 47 C.F.R. § 2107, as CenturyLink is proposing to do, that will help remediate the call failures. Even if a carrier cannot implement the safe harbor, or even if it is not subject to federal reporting requirements, it may be able to reduce the number of intermediate carriers in its call paths. The reductions can be accomplished either through new interconnection agreements or through new construction.

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Step 4

Promote transparency in the use of downstream carriers.

37. Prior to the time that federal and state authorities began to investigate the rural call completion failures, many of the intermediate carriers were hidden from view. Some continue to resist relevant disclosures. The lack of transparency lessens accountability. It also hampers the Board's ability to understand and address the difficulties. Under the FCC's rules, as one of the conditions for the safe harbor, covered providers must certify that any nondisclosure agreements with intermediate providers permit disclosure of the identity of the intermediate provider and any additional intermediate providers to the Commission and the affected rural local exchange carrier. 47 C.F.R. § 64.2107. Regardless of whether a carrier takes advantage of the federal safe harbor, and regardless of whether a carrier is subject to federal reporting requirements, a commitment to certify that any nondisclosure agreement permits disclosure to the Board of both the identity of any intermediate providers and the relevant contract would increase transparency and therefore contribute to a long-term solution.

Step 5

Actively participate in the standard-setting work of the Alliance for Telecommunications Industry Solutions.

38. The FCC has applauded efforts by the Alliance for Telecommunications Industry Solutions (ATIS) to diagnose problems in call routing, cooperate on finding solutions and adopt best practices aimed at solving the problem. *In the Matter of Rural Call Completion*, 28 F.C.C.R. 16154 (FCC Nov. 8, 2013) ¶ 12. Such efforts must

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continue, because the development of industry standards for call completion has not been completed.⁹ Because all carriers must interconnect with the same public telephone network, and because interoperability and coordination are needed across all components of the network, wide industry participation in this work will help. The metrics must be specific to the particular technologies. When and as new standards are developed, companies should report them to the Board, so the Board can ensure they adequately protect consumers and are followed. In time, as the standards are more fully developed for all technologies, the Board, either on its own for intrastate calls or in partnership with the FCC for all calls, should consider giving these standards, or some of them, with any modifications that public comment may require, the force and effect of law. See and compare 199 IAC 22.5(3).¹⁰

⁹Through its Next Generation Interconnection Interoperability Forum (NGIIF), ATIS has worked with carriers and utility commissions to generate an “Intercarrier Call Completion/Call Termination Handbook” (ATIS Handbook) that describes industry standards and best practices that carriers can follow to address call completion issues and manage intermediate carriers. See *In re Complaint of Frahm*, No. FCU-2013-0007, Verizon resistance to motion to compel, filed July 11, 2014, p. 5. The ATIS Handbook, approved August 2012 and updated March 2013, is an excellent start at addressing the technical challenges but is not a finished product. On its own terms, it is “a living document” describing “some” of the problems being encountered and discussing “some” of the industry standards and practices relevant to ensuring call completion, particularly signaling, routing and trouble handling. ATIS Handbook, § 1.1. According to the handbook, carriers need to establish “Direct Measures of Quality” (“DMoQs”), such as “Call Completion Rate” and “Post Dial Delay,” for their vendors to meet. The handbook does not, however, provide any standard or norm for what an acceptable metric value might be. See ATIS Handbook, § 5.6 and Table 2. Some of the SIP (Session Initiation Protocols) mechanisms are not yet standardized. ATIS Handbook, § 4.1.1.3.

¹⁰The cited subrule contains specific standards that local exchange carriers must meet, among them: (i) complete dialing of called numbers on at least 97 percent of calls without encountering an all-trunks-busy condition, during average busy-season busy-hour; and (ii) properly tested alarms on a 24-hour basis to indicate improper functioning of equipment.

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Step 6

Exercise responsibility over the use of downstream intermediate carriers.

39. Each originating and intermediate carrier that makes use of downstream intermediate carriers should have sound policies in place addressing each of the following elements:

- Establish and conduct standardized testing routines;
- Investigate on an ongoing basis whether downstream carriers have properly designed and properly functioning equipment, including properly designed and properly functioning software;
- Investigate on an ongoing basis whether downstream carriers have sufficient capacity in their switches and call paths to carry the traffic to the intended destinations;
- Require each downstream carrier on an ongoing basis to provide specific information regarding its system and the limitations of its system, including information regarding any difficulties its system may have interoperating with other systems using a different technology;¹¹
- Require each downstream carrier on an ongoing basis to provide specific information regarding any bandwidth or other capacity constraints that would prevent its system from completing calls to particular destinations at busy times;
- Require each downstream carrier to have properly designed and properly functioning alarms in its system so as to ensure immediate notice of any outages on its system;
- Require each downstream carrier to have properly designed and properly functioning mechanisms in place to ensure that the downstream carrier, if unable to complete a call, timely releases the call back to the upstream carrier (ATIS Handbook § 5.3);
- Require each downstream carrier to have properly designed and properly functioning mechanisms in place to ensure that the downstream carrier, if making successive attempts to route the call through different lower-tiered

¹¹The need for such sharing of information will commonly override a carrier's desire to treat the information regarding its system as confidential.

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downstream carriers, timely passes the call to a second (or third or fourth) lower-tiered downstream carrier if a first (or second or third) lower-tiered downstream carrier cannot complete it;

- Require each downstream carrier to have properly designed and properly functioning mechanisms in place to detect and control looping, including the use of hop counters or other equivalent mechanisms that alert a carrier to the presence of a loop (ATIS Handbook § 4.1.3);
- Establish direct measures of quality and require downstream carriers to meet them (ATIS Handbook, § 5.6 and Table 2);
- Establish and implement appropriate sanctions for intermediate carriers that fail to meet standards;
- Require downstream carriers to manage lower-tiered downstream carriers and to hold lower-tiered downstream carriers to the same standards to which they themselves are held (ATIS Handbook § 5.8);
- Define the responsibilities of downstream carriers in an agreement (ATIS Handbook § 5 introduction).

Step 7

Provide copies of the Iowa portion of the federal data and the FCC's analysis of the Iowa data to the Board and OCA.

40. The Board cannot effectively evaluate problems and ensure the implementation of successful solutions without ready access to relevant sources of information. Nor can OCA adequately discharge its responsibilities to Iowa consumers without such access. The FCC's data collection processes, including the generation of call answer rate (CAR) and network effectiveness ratio (NER) statistics for each rural operating company number (OCN), including each rural OCN in Iowa, together with the FCC's analysis of these metrics, is specifically designed to provide relevant sources of information. For that reason, the Iowa data and the FCC's analysis of them would assist

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the Board in addressing the rural call completion problem in Iowa and assist OCA in representing the interests of Iowa consumers. On an ongoing basis, a company reporting to the FCC should therefore provide copies of its Iowa data and the FCC's analysis of the Iowa data to the Board and OCA.

Step 8

Keep routing tables up-to-date.

41. Accurate routing tables are essential to successful call completion. *In the Matter of Rural Call Completion*, 28 F.C.C.R. 15164 (Nov. 8, 2013) ¶ 42 & n. 49. If the tables are not properly updated, for example, some calls may fall into a loop and never be set up. *In the Matter of Rural Call Completion*, 28 F.C.C.R. 1569 (Feb. 7, 2013) (separate statement of Commissioner Ajit Pai). Due to consumer elections to switch carriers and to local number portability, among other factors, these tables are changing constantly. Routing tables must therefore be kept up-to-date. The updating should be done through the Local Exchange Routing Guide (LERG) of the Traffic Routing Administration.

Step 9

Provide periodic progress reports to the Board on implementation.

42. Each company should provide periodic reports to the Board regarding the progress it is making in fulfilling any commitments it makes.

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Conclusion

OCA submits this report, to be read in conjunction with the reports referenced in paragraph 1, setting forth the results of its investigation and its conclusions regarding concrete steps that the companies can take toward a long-term solution.

Respectfully submitted,

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